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# British corporate networks, 1976-2010: extending the study of finance-industry relationships.

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Using an extensive and unique dataset that has been created to record the composition of the boards of directors of the Top 250 British firms between 1904 and 2010, this article builds upon a previous study on the corporate network to 1976 by extending the study to 2010. The analysis revolves around three key observations: the nature and depth of the corporate network; the distinct stages in corporate connectivity between 1976 and 2010, and the 1980s watershed in the relationship between financial and other sectors, following which financial institutions withdrew from the corporate network. The article will conclude with an analysis of how the dataset has changed our perceptions of British corporate networks, wider changes in British business and a discussion of implications for future research.

## Introduction

While an extensive literature analysing the relationship between British financial institutions and the rest of British business has been generated, it is apparent from a detailed and long-term investigation of the corporate network that aspects relating to inter-organisational relationships and wider patterns associated with the financialisation of British business need to be further examined. While the authors recently revisited patterns of corporate connectivity in Britain from the beginning of the twentieth century to 1976,<sup>1</sup> given the continuing shifts in British business and the dramatic changes experienced in the financial sector, patterns of corporate connectivity beyond the 1970s are illuminating. The motivation behind this article is to extend the study to 2010 in order to gain further insights into patterns of corporate connectivity, thereby revealing previously unrecorded changes in British corporate networks. Scott and Griff, who conducted a study of the British corporate network up to the 1980s concluded that British business was dominated by financial interests,<sup>2</sup> given both the latter's extensive representation on boards of directors and recent changes in ownership structures. More recently, Froud et. al. substantiate this overarching claim, noting that British corporate strategy has come to be dominated by "financialization", namely, the

primacy of maximising shareholder value in order to limit the risk of exit by the financial institutions that have come to own the bulk of the equity in British business.<sup>3</sup> Of course, dramatic shifts in British business are nothing new, in that Hannah's seminal work highlights cycles of corporate activity which transformed the British business landscape over the course of the twentieth century.<sup>4</sup> Nevertheless, the work of Hannah, Toms, Wilson and Wright, and most recently our own, pinpoint a distinct gap in our understanding of the British business landscape from a wider perspective.<sup>5</sup>

Examining macro-trends in inter-organisational relationships across industries and decades allows one to identify specific patterns related to corporate connectivity, financialisation, corporate governance and, importantly, shifting patterns of ownership. As Cheffins has recently noted with regard to US business, there is an urgent need to reassess the corporate landscape of the twentieth century and reemphasise the passive owner role undertaken by large financial institutions, an exercise that must also be conducted on UK business in the last century.<sup>6</sup> Using a novel methodological tool, the corporate network of interlocking directors, this article covers these issues, providing key insights into inter-organizational relationships, particularly those between financial institutions and industrial companies, and assessing the role of a vast range of financial players in British business. Illuminating distinct patterns within British corporate connectivity and the position of financial institutions in the network as a whole offers a unique perspective into the impact of continually changing policies and codes of practice, increasing investment from abroad and switches in the role of financial institutions in British business. Alongside examining the position of commercial banks in the network, we also give deserved attention to the position and connectivity of other financial institutions, such as insurance companies, merchant banks, trusts and similar players. This wider perspective reveals numerous pathways for further research which could have significant implications for assessing the effectiveness of the British regulatory environment, inter-organisational responses to crisis and the impact of increasing global financial connectivity.

In generating fresh insights into the dynamics at play within British business, an extensive and unique dataset has been created to record the composition of the boards of directors of the Top 250 British firms (according to net assets) between 1976 and 2010. We have chosen to begin our examination in 1976, a post-crisis period which ushered in a new era, signifying a distinct change in the nature of Britain's financial system and corporate activity in general.<sup>7</sup> Additionally, although inter-war industry reports focused on the role of banks in British industry, by the 1970s financial institutions other than commercial banks (such as insurance companies, pension and investment funds, merchant banks, etc.) played a much greater role in industry. Our focus will be on these financial institutions and their position in the corporate network, demonstrating the extent to which boards were connected at different points over the last half century.<sup>8</sup>

The analysis provides the basis for three key observations that offer a fresh view of the relationship between the boards of Britain's major corporations. Firstly, we observe from our data a general move across British business from a well-integrated, dense corporate network to one which is far more dispersed. This is consistent with existing empirical evidence which associates this dispersion with a lack of shareholder engagement in the management of their portfolio companies, a trend that remains unchanged when international investors became the dominant owners of UK equities (see Figure 2).<sup>9</sup> Secondly, the data reveals three distinct stages in corporate connectivity between 1976 and 2010 (pre-Cadbury, post-Cadbury, and post-2008 crisis). These stages are accompanied by significant shifts in the patterns of ownership of major British business, changing regulations that governed board activity, and the growing complexity of transactions which resulted from an influx of a plethora financial intermediaries. Thirdly, one can identify a watershed in the relationship between the financial and industrial sectors in the 1980s, at which point financial institutions started to withdraw from the UK corporate network as a result of the pursuit of global strategies and a preference for highly speculative short-term financial trading.<sup>10</sup>

Starting with a brief synopsis of the various literatures analysing these trends, our paper will move on to explain the methods and data employed in pursuing this research project, focusing our attention primarily on the depth and nature of the intercorporate networks that existed from the 1970s into the early twenty-first century. This will provide the basis for an original analysis of the relationship between and within sectors, contributing extensively to important debates on financialisation, the evolution of corporate governance and cycles of corporate connectivity in Britain over this fifty-year period.<sup>11</sup> The article will conclude with an analysis of how the dataset has changed our perceptions of British corporate networks, feeding directly into policy debates and recent work by the Bank of England on the interconnectedness of British financial institutions.<sup>12</sup>

## **Literature Review: The Financial Sector and Corporate Activity in Britain**

Business historians have a long tradition of examining Britain's financial sector, especially as it pertains to commercial banks over the twentieth century. Particular interest has been bestowed upon banking concentration in the early twentieth century and banks in the inter-war period, mainly as a result of government and public scrutiny of these institutions at that time.<sup>13</sup> Works by Cottrell, Billings, Capie, Collins and Ross have served to provide a thorough and multi-dimensional examination of banking in Britain, particularly between the First and Second World Wars.<sup>14</sup> Literature on financial institutions in the post-war period has also expanded in recent decades, especially in the context of the turbulent times of the 1970s, the deregulation of the 1980s and more recent financial sector complexities and crises,<sup>15</sup> placing much greater emphasis on examining financial institutions within the wider contexts of industrial sectors and inter-sector relationships.<sup>16</sup> Garnett, Mollan and Bentley demonstrate the illuminating patterns that can be deciphered from examining relationships between banks over long periods, designating them a 'system of discreet, interacting agents'.<sup>17</sup> Similarly, in their investigation of private equity in the UK, Toms and Wright stress the importance of

examining inter-organisational relationships (both inter- and intra-sectorally) through comparative periodisations, thereby drawing broader conclusions regarding corporate activity in the private equity sector.<sup>18</sup> Turner also takes this long-run view of understanding banking and crises as cyclical and inter-related,<sup>19</sup> while our own research on corporate networks from 1904-1976, as well as this study of the later period, contribute to these long-run examinations by highlighting significant trends in British corporate connectivity over a century.<sup>20</sup>

The literature on the evolution of corporate governance and the role of financial institutions as monitors, advisors and, indeed, owners of British business, has also increased in the last twenty years. Bowden's work on the crisis at Rolls-Royce identifies the importance of intra-sectoral ties in finance in assisting critical corporations.<sup>21</sup> Similarly, Toms and Wright examine the importance of syndicates in domestic industry and the market for corporate control.<sup>22</sup> Scholars such as Cheffins and Nordberg and McNulty have provided detailed longitudinal assessments of changing perceptions of corporate governance, as well as definitions and behaviour related to the monitoring of corporate activity.<sup>23</sup> While this literature is of relatively recent vintage, the debate over the scale and nature of financial institutions' involvement in British industry has persisted throughout the twentieth century. This was especially the case in the inter-war years,<sup>24</sup> while by the 1950s such had been the change in ownership of most firms quoted on the London Stock Exchange (see Figure 2) that policy-makers were focusing on the nature of this relationship.<sup>25</sup> Although recent significant studies by Acheson et al has served to highlight the existence of an "extreme divorce" in the relationship between ownership and control even before 1914,<sup>26</sup> the post-war period witnessed the continuation of this process, albeit with the increasing dominance of first institutional investors and after the 1990s, foreign investors.

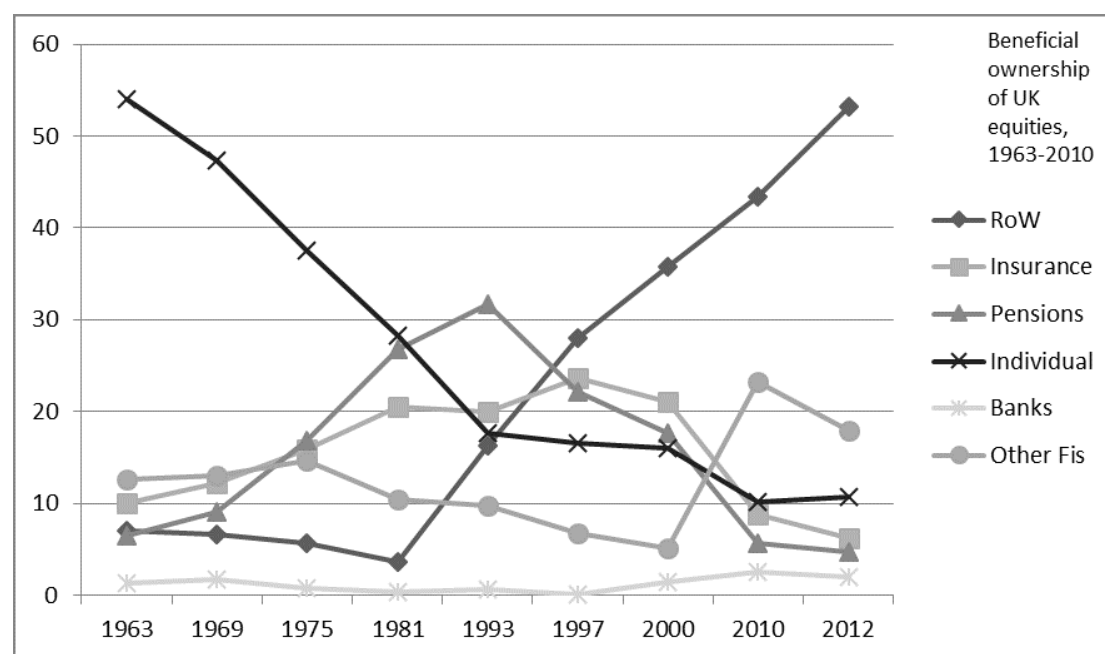
One significant factor which has shaped not only the corporate network but also the general nature of British business in recent decades is the continual shifting patterns of ownership of British firms. It is apparent that over the twentieth century the nature of institutional ownership in particular changed from dispersed and passive to re-concentrated,

yet still passive. In separate articles, Davis and Jackson have claimed that a lengthening of the investment chain and increasing number of financial intermediaries involved in corporate ownership marked a transition from “Managerial Capitalism” to an era of “New Financial Capitalism”, namely, a system characterised by a re-concentration of corporate ownership in the hands of large investment fund managers, the bulk of whose activity was based on the pursuit of short-term investment strategies.<sup>27</sup> By the early twenty-first century, UK institutional investors’ portfolio turnover had reached 56%,<sup>28</sup> while the average holding periods of shares has fallen from six years in the 1960s to less than six months by 2015.<sup>29</sup> Another body of research points to the dominance of short-term investors whose impatience often erodes value,<sup>30</sup> precipitating the expression of deep public concerns about this pattern of behaviour. It would nevertheless appear fair to conclude that in spite of these concerns, attitudes within the financial sector appear to have changed very little over the last century,<sup>31</sup> in spite of criticisms that short-termism in the UK has had a deleterious impact on corporate performance.<sup>32</sup> Crucially, there is extensive empirical evidence of investor disengagement, inefficient monitoring and lack of influence over corporate management.<sup>33</sup> Indeed, such is the near universal disengagement of institutional fund managers that in the early twenty-first century senior management would appear to be as free to determine corporate strategy as in the 1930s, the decade described by Hannah as “the golden age of directorial power”.<sup>34</sup>

In recent years, while a large percentage of UK ownership has been transferred into the hands of foreign investors, this has increased the distance between the board and shareholders, allowing for shareholder passivity to continue.<sup>35</sup> Figure 1 demonstrates how the proportion of shares traded on the London Stock Exchange held by private investors fell dramatically from the early-1960s, reaching just eleven per cent by 2012, while over the same period institutional investors such as mutual funds, insurance companies and pension funds came to dominate. Although one can explain this trend by noting that individuals increasingly preferred to invest their wealth through institutions, as we shall go on to explain the nature of institutional ownership portrayed the same passive characteristics as the private investors of

the nineteenth century portrayed by Acheson et al.<sup>36</sup> The growth in foreign ownership of UK listed equities ('Rest of World' in Figure 1) remains primarily institutional in nature, including sovereign wealth funds and performance-driven hedge funds.<sup>37</sup> This reaffirms the view that institutional investors have owned the bulk of quoted British equities over the last fifty years, leading to a broad acceptance within academic and policy debates that this shift in institutional ownership has been allegedly accompanied by a movement away from power being vested in corporate boards and senior management to institutional fund managers.<sup>38</sup> These crucial changes in corporate activity, ownership and governance in the last fifty years have had significant implications for the network of interlocking directorates and have served to shape the network in interesting ways, as will be discussed below.

*Figure 1: Beneficial Ownership of UK equities, 1963-2010*



Source: Share register survey report, Central Statistics Office (CSO), 2010.

Corporate law assigns ultimate decision-making authority to a group (i.e. the Board of Directors) rather than a single individual. The board ultimately has three key functions: management, oversight and service. The lines between these functions are fuzzy at best and over time there has been a shift from boards having an advisory role in the 1970s to a more



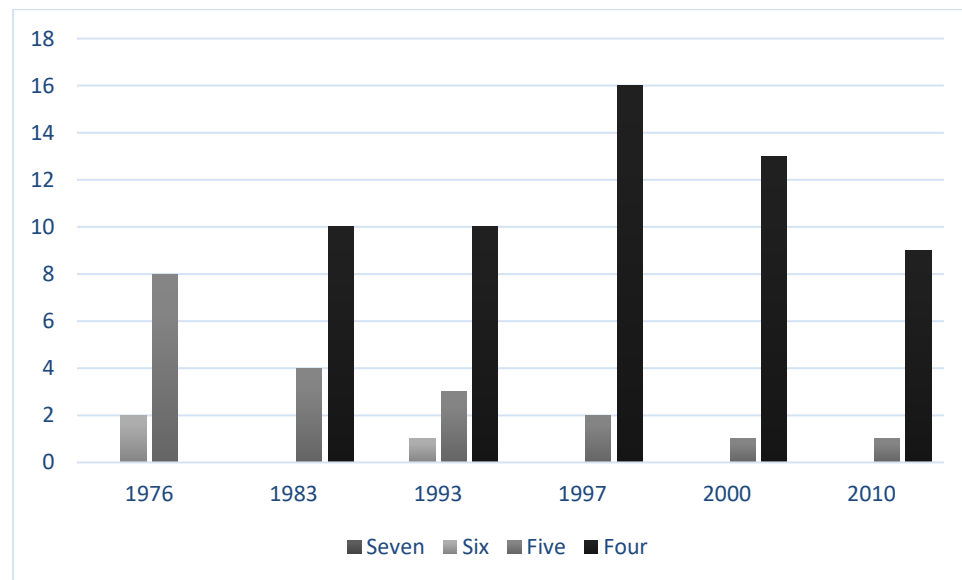
managerial role in the 1990s, with an increasing emphasis on the monitoring role and director independence in the context of persisting corporate scandals and failures in 2000s.<sup>39</sup> Given these shifts, the board interlock becomes a crucial unit of analysis for wider trends in corporate connectivity, providing us with a novel perspective on trends in British business. Interlocks comprised of directors who sit on more than one corporate board constitute a corporate network, providing incisive insights into the nature of inter-organisational relationships. Interlocks often indicate the presence of a commercial relationship, whether personal or capital in nature, the latter being a relationship typically between shareholders and the company in which they invest.<sup>40</sup> Similarly, interlocking directorates have been widely analysed in the context of corporate strategy, focusing specifically on the impact of outside directors on senior management.<sup>41</sup>

The importance of analysing board interlocks is rooted in both the role of the board as decision-maker and the various roles of directors who linked multiple boards together (known as “linkers”). As a ‘distinctive feature of the corporate form’, boards and links between boards offer an insightful representation of company-to-company relationships and wider corporate structures.<sup>42</sup> As the board has numerous functions which include dictating corporate strategy and monitoring the performance and general decision-making of management,<sup>43</sup> this highlights the significance of studying board inter-locks formed by these so-called “linkers”. Previous studies and reports have shown that interlocking directors within their varying positions (non-executive, independent, chairman, etc.) can have an impact on corporate accountability, decision-making and access to resources (in particular information and external contacts).<sup>44</sup>

Related to this, our most recent article highlights the presence of what we have referred to as ‘big-linkers’ in the first three quarters of the twentieth century. These were individuals, usually regarded as having a high social status, who possessed multiple board seats; the highest number being seven board seats in 1938 held by two individuals, Lord Essendon and J. B. A. Kessler. For the period under investigation in this article, one can

observe in Figure 2 the distinct reduction in positions where over five board seats are held by one person. While an increase in the presence of those holding four board seats is apparent in the late 1990s, by 2010 this number was also significantly reduced.

*Figure 2. Number of board seats held by ‘big linkers’, 1976-2010*



In cases where outside directors represent shareholders’ interests, Roberts et al. argued that these individuals should be motivated to take up non-executive board positions, because in doing so this would give them direct access to corporate strategy and allow for efficient monitoring of corporate behaviour, as well as opening a useful line of communication between owners and top management.<sup>45</sup> Given the findings of Acheson et al. regarding the lack of shareholder voting rights in early UK companies, it is possible that board interlocks (whether as non-executives or other forms of “linkers”) historically acted as an alternative conduit to corporate control and continue to do so in the current business landscape.<sup>46</sup> At the same time, our examination of the corporate network demonstrates not only the transformation of corporate connectivity over numerous decades, but also the changing composition of board interlocks, potentially isolating boards from contacts which could prove useful, thereby impacting on lines of communication throughout British business.

Crucially, arising from the analysis of the corporate network data and supplementary data, it is clear that the role of financial institutions in the British corporate landscape has shifted significantly and the network overall has experienced notable fluctuations in connectivity in response to various market conditions and regulatory changes. This is demonstrated by the decreasing connectivity of the corporate network, as we shall demonstrate below, especially in the case of financial institutions, which have been withdrawing from the core of the UK corporate network in recent decades. Additionally, following major corporate governance code changes and financial crises, there have also been periods of reactionary network reintegration.<sup>47</sup>

Examining the corporate network of interlocking directorates as a whole can thus provide a unique perspective on the presence of these relationships across and within all sectors. Many scholars have adopted this approach for earlier decades. For example, Utton highlights the relationship between clearing banks and the manufacturing sector in the mid-1970s, while Whitely demonstrates the significance of intra-sectoral ties within the financial sector in the same period.<sup>48</sup> Moreover, while Cosh and Hughes argued in the 1980s that “this recurring intimacy between relatively small numbers of giant financial and industrial concerns is clearly a significant feature of the contemporary anatomy of corporate control and must be taken into account in assessing trends in the separation of ownership and control and its behavioural implications”,<sup>49</sup> it is clear that investor disengagement is a much more common feature of British business, justifying a detailed analysis of how the corporate network changed over time.

Given investor disengagement and short-termism, one must question whether these types of relationships were ever of significance in determining corporate strategy.<sup>50</sup> Aguilera argues that the historical relationship between shareholders and boards of directors has largely been ignored due to the passive role of institutional shareholders towards corporate decision-making.<sup>51</sup> In the 1970s, Briston and Dobbins predicted that continued investment by financial institutions in industry would draw fund managers much more into managerial problems, thus

creating a necessity for investor activism.<sup>52</sup> Scott and Griff have also shown that in the 1970s and 1980s the corporate network was comprised of multiple ‘groupings’ of financial and non-financial enterprises, leading them to conclude that the former were by far the most dominant influence on corporate strategy.<sup>53</sup> Indeed, they claim that “Financial Capitalism” was the abiding characteristic of British business by that decade, given the recent transfer of ownership to institutional investors (see Figure 1) and an extensive network of interlocking directorates that apparently vested them with paramount control over the rest of British business.

Although the studies by Scott and Griff and others have provided valuable insights into corporate network structures, the role of traditional financial institutions and the ownership of equity stakes up to the 1980s, it is now timely to readdress the past fifty years of corporate and financial developments. Building on the general approaches suggested by Toms et al. and Garnett et al., this article provides a wider lens through which to view the evolution of corporate connectivity and activity in the UK from the late 1950s. Through the use of corporate network analysis, we can begin to draw important correlations between corporate connectivity, integration, dispersion and reintegration of the network, and what this might suggest regarding patterns of ownership, shifting corporate strategies and the role of various financial players in British business.

## **Methodology and Dataset**

A highly effective method of assessing financial-industrial sector relationships has been through the use of corporate network analysis. A number of studies reveal the efficacy of corporate networks in isolating distinct inter-organisational patterns in business communities across the globe. While many of these tend to focus on the US, the Netherlands and Germany, scholars such as Scott and Windolf have engaged with aspects of the British corporate network.<sup>54</sup> This study of the British corporate network significantly adds to the literature by exploring the British case up to very recent years through the use of network data

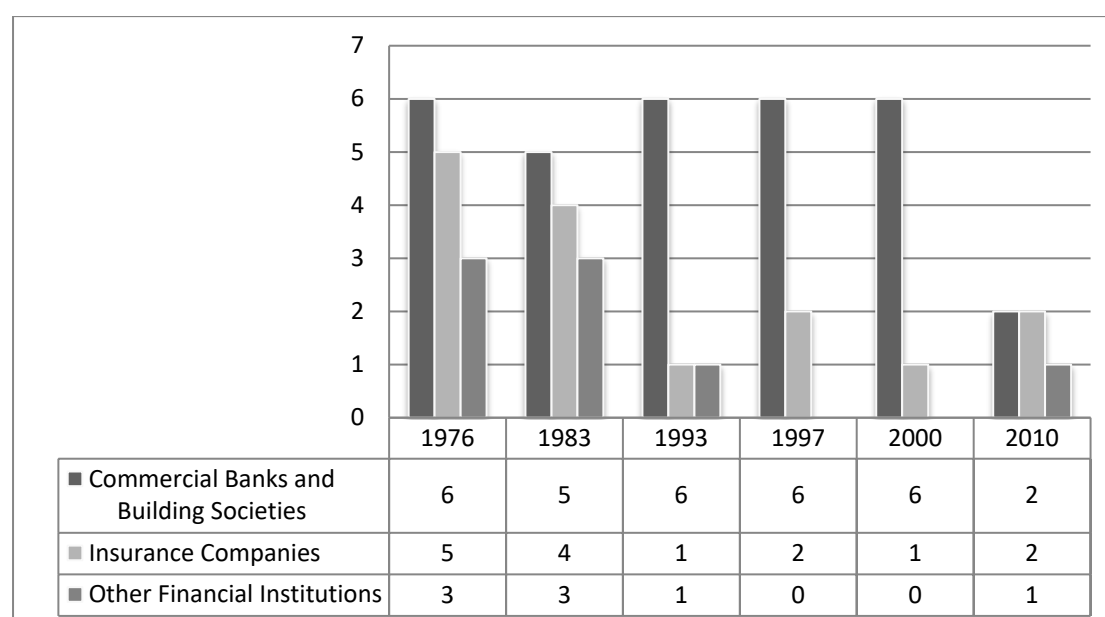
and network visualisations, which are a useful iterative tool for uncovering both wider trends and pathways for further research. In particular, the article emphasises the importance of examining all financial institutions and their activity within the network, rather than focusing only on commercial banks.

Examining complex inter-organisational relationships as represented by board interlocks has required the creation of a longitudinal dataset detailing the extent of interlocking directorates within the UK's top 250 companies (fifty financial, 200 non-financial, based on net assets) for sample years (1976, 1983, 1993, 1997, 2000 and 2010). The years selected represent distinct phases within British business from the period which followed the 1973 secondary banking crisis and multiple policy changes with regard to the financial sector and corporations in general (1976 and 1983), the period after the Big Bang (1993), the decade of corporate governance code implementation (1997 and 2000) and the years following the Global Financial Crisis (2010). The data has been gathered from varied sources such as the Stock Exchange Year Book, Times 1000 list, Thompson One, annual reports, BoardEx and pre-existing datasets.<sup>55</sup>

Using network analysis software (Pajek), we have constructed network graphs for each of these benchmark years, aiding the analysis of the changing structure, shape and density of the network.<sup>56</sup> Measures of network integration, connectivity and dispersion have proved useful in a multitude of cases and contexts. Many studies have demonstrated the propensity of firms and individuals to form networks in order to gain resources, both tangible and intangible.<sup>57</sup> The shape of a network and the connections forged and broken occur often as a response to changes in the environment. Indeed, examining the network of interlocking directorates over decades provides an excellent tool with which to view many of the broader changes that occurred within the British business (and indeed, global business) environment. Importantly, through the use of actor centrality measures (known as the Freeman degree), it has allowed us to gauge which firms occupied the core and periphery of the network in each sample year. Discovering actor centrality through the Freeman degree, which is the sum of

the shortest paths from a singular node, allows the ranking of firms according to their connectedness, the outcome of which reveals how the composition of the core of the network changed over time.<sup>58</sup> For example, Table 1 demonstrates the changing presence of financial institutions (banks, insurance companies and other financials) and the dramatic withdrawal of such institutions since the 1980s. The value of the Freeman degree across the benchmark years also provides insights into the relative density of the network for each year, thereby determining the level of integration within the network.<sup>59</sup>

*Table 1. Financial Institutions in the top 25 most central companies.*



*Source: corporate networks dataset.*

Other measures, such as firm marginality, isolation and ‘betweenness centrality’ have also been examined in each of the network years. This has provided an indication of the relative distance between firms in the network, the number of firms which held significant intermediary positions and the types of firms which occupied the periphery of the network. Crucially, for each year we have also isolated the links between financial institutions (all types) and the rest of the network. This data provides insights into the frequency of intra-sectoral and inter-sectoral links which could indicate an owner-investee company or

advisor/advisee relationships, the presence of financial syndicates or cartel-like behaviour, inter-sectoral alliances and, importantly, how intra- and inter-sectoral relationships shifted over time in response to the changing nature of business in general. Although the analysis of the corporate network enables us to determine the connectedness of particular firms and the overall structure of the directorate network, used in connection with ownership data (see Figure 1) we can draw important correlations between degree of ownership and firm centrality for a given year. This provides crucial insights into shareholder-board interlocks, allowing us to formulate conclusions regarding the level of engagement between the two as patterns of ownership shifted over this period. We can also draw conclusions regarding the impact of overseas investment activity, impact of policy implementation such as the Cadbury Report and network responses to crises, all of which add to our understanding of the various transformations undertaken by the wider British business community in the last half century. The following discussion illustrates some of the major changes experienced by the corporate network over the benchmark years in conjunction with more general changes in the British business landscape.

### **The Corporate Network, 1976-2010**

The dataset of inter-locking directorships reveals much about changing corporate connectivity in British business over the period 1976-2010. Our previous article highlighted a number of significant shifts in the pattern of inter-organisational relationships to 1976 visible through an analysis of the corporate network. The corporate network of both pre and post-war years (1938 and 1958) demonstrated a highly centralised and embedded network. Especially in 1958, a denser core of the network dominated by financial institutions had emerged, and while these institutions remained well-connected at the centre of the network, the percentage of isolated or marginal firms was high (55%).<sup>60</sup> The cartel-like financial clustering evident in the corporate network of 1958 illustrates the inward-looking business environment influenced by a domestic turn in business during this period.<sup>61</sup> Driving much of this behaviour in the

period leading up to 1976 were the restrictive lending practices put in place by the government and carried out through the Bank of England.<sup>62</sup> In the following decades, this environment was in perpetual flux, influenced by financial crises, policy changes and changing patterns of ownership, all which contributed to the rise of new financial players as advisors and intermediaries. In the 1960s and 1970s, as direct private investment declined and individuals began to invest their personal wealth through financial intermediaries, institutional investors became “the protector of the private shareholder”, the “supervisor of efficient resource allocation”, the “auditor of management efficiency”, and at times, simply an investment advisor.<sup>63</sup> As companies searched for greater liquidity in the 1960s, the Stock Exchange and large financial investors and advisors were consequently of much greater importance.<sup>64</sup> In this period leading up to the late 1970s, one can also view a shift in the practices of traditional financial institutions such as merchant banks, who were expanding their role as investment advisors to British industry.<sup>65</sup>

Another major influence on the network was the merger wave of the late 1950s and 1960s which amalgamated a number of core British firms, both financial and non-financial. Linked to these changes was a significant shift in ownership of British equities, as outlined in Figure 1, with institutional investors increasing their share to 34.2%, the largest being insurance companies (12.2%), which at times acted on the behalf of pension funds.<sup>66</sup> Most notable amongst the changes in investment practices was the decline in private ownership of UK equity, fundamentally changing the landscape of British business. Changes in the regulatory environment in the late 1960s and the secondary banking crisis of the early 1970s signified the need to reassess the role and freedoms of financial institutions in the British economy.<sup>67</sup> This period led to yet another shift in the British business landscape which impacted the shape and connectivity of the corporate network in 1976 (Figure 3). In 1976, the network demonstrates growing integration of firms as the overall number of marginal or isolated firms declined significantly from previous years.<sup>68</sup> In the core of the network (Table 2), the presence of financial institutions other than commercial banks has increased,





Commercial Union	18
Finance For Industry	17
Hill Samuel Group	16
Delta Metal	16
Tube Investments	15
Imperial Chemical Industries	15
Shell Transport & Trading	14
Standard Chartered Bank	14
Rank Organisation	14
Eagle Star Insurance	14
Royal Insurance	13
Guardian Royal Exchange Insurance	13
P & O Steam Navigation	12
Lazard Brothers	11
General Accident, Fire & Life Assurance	11
Lucas Industries	11
Dunlop Holdings	11
British Leyland	10
Fisons	10

Hawker Siddeley Group	10
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The change in ownership patterns was widely known by the time of the Wilson Commission report, which highlighted the distinct move towards ownership of securities by financial institutions such as insurance companies and pension funds. This transfer of ownership arose out of a general preference for owning shares through financial institutions such as unit and investment trusts, as well as a failure by the City to support private investors who had less wealth but were eager to invest in domestic corporations.<sup>69</sup> At the same time, there is little evidence that the accumulation of equity by institutional investors either exerted any influence over merger activity or resulted in the formation of shareholder voting coalitions.<sup>70</sup>

It is apparent from Figure 1 that institutional investors continued their strategy of investing in British business, given that by 1981 they owned over half of all listed UK equities (57.6%) and pension funds had overtaken insurance companies as the largest single category.<sup>71</sup> A complicating factor in this scenario, however, was the 1980 Companies Act, which by criminalising insider dealing not only made it especially difficult for fund managers to access privileged company information, but also created a legal necessity for each to maintain a distant relationship.<sup>72</sup> Increased competition in the financial sector during the 1980s, brought on by de-mutualisation and the extensive incursion of foreign banks, facilitated by the liberalisation of financial dealing, incited institutions to focus on new areas. Banks, for instance, turned their attention to retail banking and international investments as the market for corporate finance became saturated with ‘other financials’ and new financial intermediaries.<sup>73</sup>

This departure from traditional activities created even greater complexity within the financial sector, while it is also apparent from Table 3 that even before the ‘Big Bang’ of 1986 the nature of the intercorporate network was changing dramatically, most likely exacerbated by

an intense merger wave. Indeed, one can see from Table 3 that by 1983 the average Freeman degree of the firms at the core of the network was much lower than it had been in previous years. This indicates that as many firms were decreasing the number of direct board links they possessed, the network as a whole was much less dense and the distances between firms was increasing, creating the much more dispersed network which can be seen in Figure 4.

However, while the core of the network was noticeably less dense, the number of firms connected to the network increased to 81% (up from 75% in the previous benchmark year). This trend is linked to the rising number of marginal firms (with only one or two connections to the network) which by 1983 made up 30% of the network overall. While financial firms were still at the core of the network and ‘other financials’ continued to increase their role as shareowners of non-financial companies, the network was far less concentrated than it had been in previous year (see Table 2). Above all, this can be linked to the shifting focus of financial institutions which created greater dispersion in inter-sectoral links, which if we combine this with evidenced preference for short-term results, suggests that the implementation of long-term co-operative relationships between boards and shareholders was diminishing. The increased distance between financial and non-financial institutions could have been exacerbated by many firms turning their focus towards international investment activities, giving rise to the much greater frequency of ‘faceless’ interactions facilitated by the use of new technologies.

*Table 3. Top 25 most central companies (based on Freeman degree), 1983*

<b>Company name</b>	<b>Freeman Degree</b>
Lloyds Bank	20
Barclays Bank	18
Rio Tinto-Zinc Corporation	14
Hill Samuel Group	13
Midland Bank	13
National Westminster Bank	13
Sun Alliance & London Insurance	13
'Shell' Transport & Trading	12
Royal Insurance	12
British Petroleum Co.	11



were connected mainly to industrial companies, apart from a small number of investment trusts and insurance companies. Although these financial institutions retained good inter-sectoral links, with only a small group of firms (with a Freeman degree of less than two) favouring ties to other financials (only four retained no ties to the network), it is clear that the financial cartel of the 1950s had disappeared.<sup>74</sup> Furthermore, the network was more dispersed, with 'other financials' diversifying their links more extensively in order to protect their investments.

While the growing concentration of ownership by financial institutions had the potential to allow for cohesive corporate coalitions and greater shareholder influence over corporate behaviour,<sup>75</sup> the growing dispersion of the network potentially reflects the increasing disconnect between shareholders and boards. Crucially, despite the potential for greater communication between shareholders and boards, the expected power shift into the hands of investors did not occur. Moreover, the deregulation of the London Stock Exchange in the mid-1980s provided foreign financial institutions with much greater access to the City of London, providing new cash flows for investment, both domestic and international.<sup>76</sup> The clearing banks especially shifted the focus of their strategies from domestic to global markets, a point substantiated in Table 4, which highlights how the centrality of the clearing banks declined by 1993. Figure 5 also illustrates how the trend towards a dispersed network continued. Table 4 reveals that while Barclays retained the same degree centrality as in 1983, the number of financials at the core of the network was decreasing significantly (see Figure 5). This continued withdrawal of financial institutions from the network was a manifestation of the lengthening investment chain which drew shareholders and board further apart, effectively leaving boards in control of their respective companies.

*Figure 5. The British corporate network in 1993*

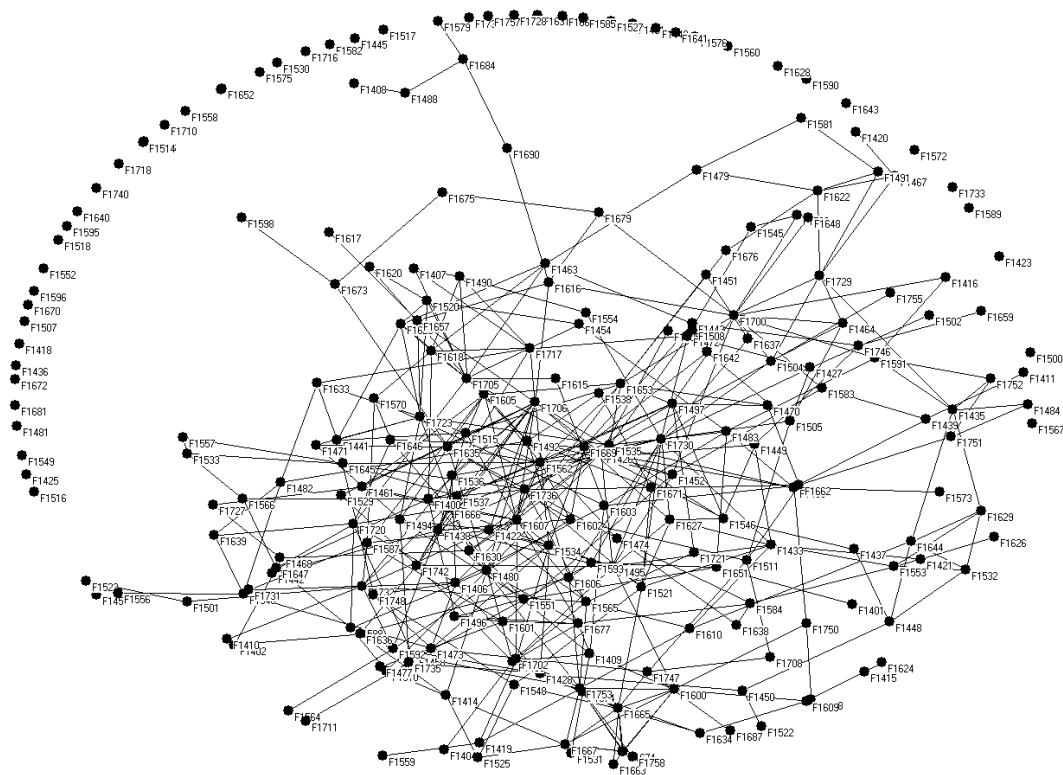


Table 4. Top 25 most central companies (based on Freeman degree), 1993

Company name	Freeman Degree
Barclays PLC	18
Rio Tinto PLC	16
Legal & General Group PLC	15
De La Rue PLC	13
Abbey National PLC	13
Trafalgar House PLC	12
Bank of Scotland PLC	12
BAA Airports, Ltd.	11
English China Clays PLC	11
Lucas Varity PLC	11
Unilever PLC	11
HSBC Holdings PLC	11
Standard Chartered PLC	11
Imperial Chemical Industries PLC	10
Smithkline Beecham PLC	10
The BOC group LIMITED	10
Lloyds Banking Group PLC	10
AstraZeneca PLC	9

Rank Group PLC	9
3I Group PLC	8
Alliance Boots PLC	8
BET PLC	8
BP PLC	8
Eurotunnel PLC	8
Hanson, Ltd.	8

In highlighting these characteristics of the 1990s corporate network, it is clear that the business environment was undergoing yet another change, given that by 1992 institutional investors owned 60.6% of UK equities, financial institutions had significantly decreased their presence at the core of the network and, reflecting the push toward changes in corporate governance policy, relations between owners and top managers were becoming even more remote.<sup>77</sup> It can therefore be hypothesised that the 1980s changes in corporate strategy and structure, such as increased divestment in subsidiaries by multidivisional corporations, played a role in changing governance arrangements, impacting on both the shape and connectivity of the corporate network.<sup>78</sup> Regardless of this renewed focus on corporate governance, however, the largest owners of industrial concerns continued their detachment from the network, which in 1993 contained the greatest number of ‘other financials’ with no ties to other firms. It is clear from the network data that while the level of integration versus dispersion was much the same as in 1983, when financial institutions’ ties are examined they reveal much greater change. The syndicated nature of finance seen in the 1950s-1960s was clearly at an end for banks, because by the 1980s they possessed far more links to industrial firms and were often only linked to one other financial. While this could suggest a positive inter-sectoral relationship, it is clear from past decades that intra-sectoral connections provided much needed support and monitoring amongst the financial sector. That said, many boards of financial institutions other than banks with connections to fewer than three other boards maintained only intra-sectoral ties, a dispersion trend that is illustrated in Figures 5 and 6.

*Figure 6. The British corporate network in 1997*



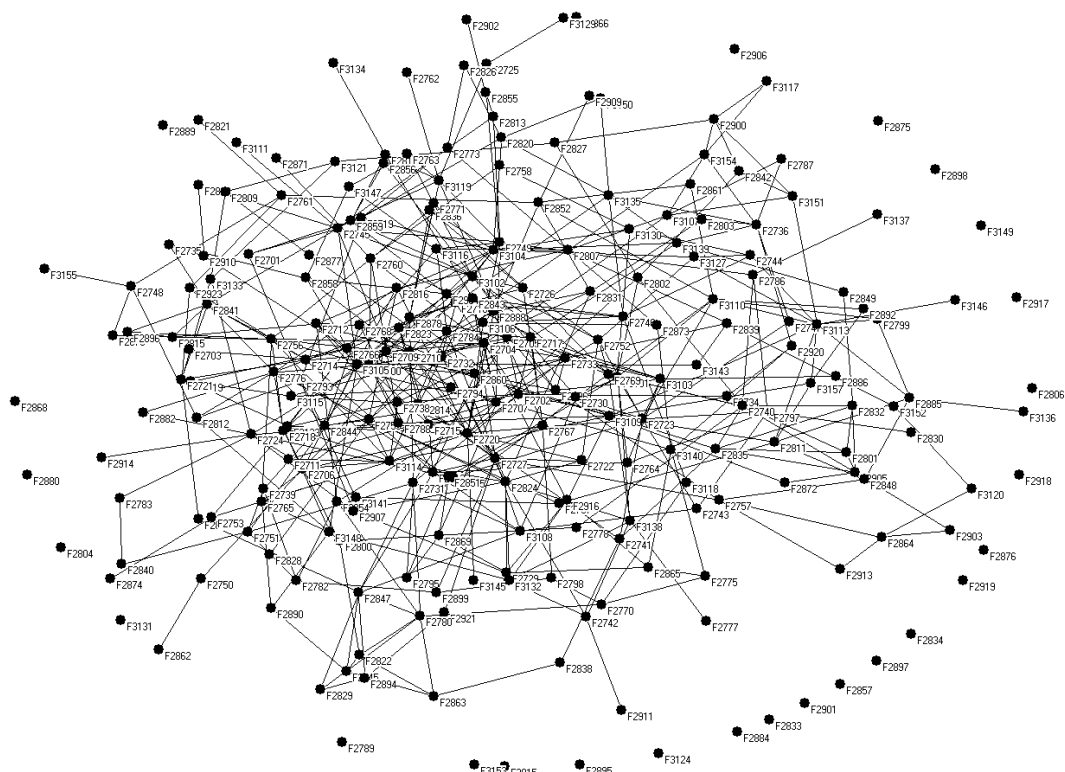


Table 5. Top 25 most central companies (based on Freeman degree), 1997

Company name	Freeman Degree
National Westminster Bank PLC	14
Marks & Spencer Group PLC	14
M (2003) PLC	13
British Airways PLC	13
HSBC Holdings PLC	13
Barclays PLC	12
Standard Chartered PLC	12
Intercontinental Hotels Group PLC	12
Bank of Scotland PLC	11
Diageo PLC	11
Alliance Boots PLC	11
Reuters Group PLC	11
Uniq PLC	11
Inchcape PLC	11
Rio Tinto PLC	11
Rank Group PLC	10
BP PLC	10
BT Group PLC	10

Tesco PLC	9
EMI Group, Ltd.	9
Unilever PLC	9
RSA Insurance Group PLC	9
Prudential PLC	9
Abbey National PLC	9
Imperial Tobacco Group PLC	9

Influenced by numerous corporate scandals,<sup>79</sup> stock market manipulations and the behaviour of some directors in large corporations, a series of reports and committees advocated the need for a closer relationship between top managers and owners.<sup>80</sup> An interesting change in the network between 1993 and 1997 reflects an important response towards to these recurrent corporate governance issues and policy changes. The most noticeable of these was the 1992 Cadbury Report, which urged boards to ensure greater accountability to shareholders in order to fulfil their fiduciary duty and ensure shareholders could exert control over their investee companies.<sup>81</sup> The Cadbury Code also sought to define more clearly the roles and responsibilities of non-executive directors as monitors of corporate behaviour, as well as the general need for a greater presence of such non-executive directors on company boards.<sup>82</sup> Conyon and Mallin found that there had been substantial compliance to the Cadbury Code by the late 1990s,<sup>83</sup> a trend further illustrated by the reduced density of the UK corporate network (see Figure 6). At the same time, the network in 1997 reached a high level of integration (significantly higher than in the previous benchmark years), with 90% of all firms retaining a tie to the network. While the number of marginal firms still occupied a large category (25% of firms), the number of completely isolated firms was dramatically lower, highlighting the increased levels of integration, albeit with a much less dense core.

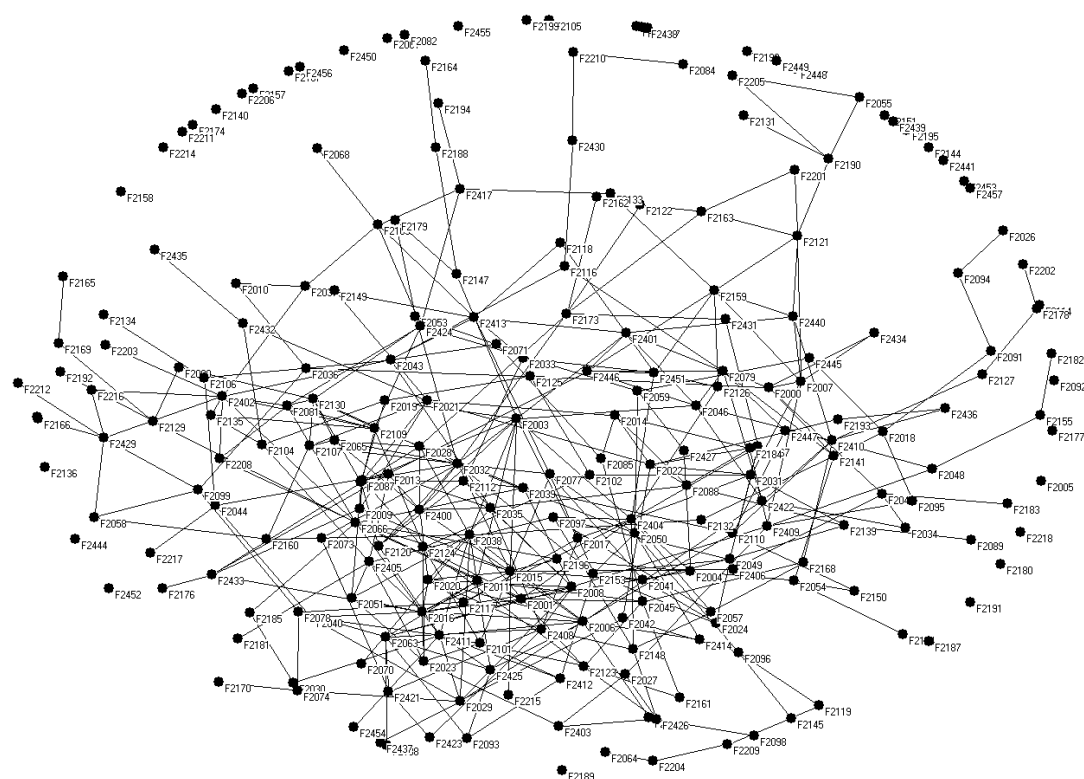
In terms of the financial sector, bank ties in this year retain much of the same composition as in 1993. On the other hand, changes to financial institutions other than banks were more pronounced. The impact of changes in policy on the position of ‘other financials’ was such that by 1997 the number of these firms with no tie to the network had fallen to just three. While the network itself was widening and less concentrated at its core, meaning more

companies were linked to the network but fewer companies possessed multiple board connections, it is clear that there was a concerted effort amongst many financial institutions to re-integrate themselves into the network and increase their ties to non-financial firms. For example, Manchester & London Assurance group, which in 1993 had no links to the network, by 1997 had five, most of which were non-financials (other than Segro PLC). Schroders, an important asset management and advisory firm, also increased its links within the network from three to five. Additionally, by 1997 Prudential PLC, whose investment arm, Prudential Portfolio Managers Ltd., had been the second largest manager of UK equities in 1991, was linked only to industrial concerns. Large fund managers of the 1990s such as M & G group and Sun Life, neither of which appeared in the 1993 network, were well integrated by 1997. The growth and consolidation of firms such as M & G group was indicative of a move toward a re-concentration of ownership. This strongly suggests that the poor corporate behaviour of the 1980s and the growing detachment of shareholders from their investee company boards had provoked both corporate governance reforms and some decisive movements within the network by 1997, even if the former were undertaken largely in the interest of protecting shareholders and little mention of changes to boardroom behaviour and general business ethics was made.<sup>84</sup>

Over the course of the next decade, the financial sector continued to grow more complex. Although the network appeared to respond positively to policy shifts in 1997 through greater integration, by 2000 the network was becoming increasingly dispersed, with a greater number of firms wholly disconnected. In this year, nearly half of all firms were either marginal or isolated, suggesting in some cases growing distance between boards, perhaps exacerbated by growing distance between owners and investee companies. Although the concentration of ownership in the hands of British financial institutions decreased from the mid-1990s and share-ownership generally became more dispersed amongst both domestic and international investors, this era witnessed a burgeoning of financial intermediaries and the lengthening of an investment chain that was already attenuated.<sup>85</sup> These developments served

to weaken even further the link between investors and their portfolio companies.<sup>86</sup> Even though building on what the Cadbury Code first introduced, the Higgs Review (2003) highlighted the growing significance of the non-executive director role in providing the basis for a relationship with investors.<sup>87</sup> Regardless of this change, however, the corporate network trends of the 1990s continued into the 2000s. In particular, it is apparent that the network widened over this period (see Figure 7), with on the one hand a significant decrease in the number of links between firms, albeit with no return to pre-Cadbury levels in terms of disconnection.

*Figure 7. The British corporate network in 2000.*



It is first of all apparent from Table 6 (see also Figure 7) that financial institutions in the network had moved even further away from the core. A second characteristic of the network in 2000 was its compartmentalised nature, with a greater number of clusters emerging that were set apart from the larger network, as well as firms connected through a chain of singular, rather than multiple, integrated links. This was significant in that companies

had fewer lines of communication within the network, thereby reducing both the extent of interaction between boards and the level of integration. Indeed, the average distance between firms continued to increase; despite more firms being connected, the path from one firm to the next was on average longer.<sup>88</sup> This reflected the complicated inter-organizational relationships emerging in this decade, a scenario precipitated by a combination of new governance codes and the increased complexity of the financial sector. By 2000, non-monetary financial institutions had all but disappeared from the Top 25 most central companies (see Table 6), potentially illustrating the continued dispersion of share ownership amongst financial institutions, individuals and foreign investors. Beneficial ownership of UK equity by institutional investors had fallen to just under 50% by 1998, a trend that continued into the twenty-first century.<sup>89</sup> The decrease in the average degree centrality of the network and the withdrawal of financial institutions from the core of the network meant that for the first time in the dataset, three non-financial companies occupied the position of most central in the corporate network (see Table 6). While banks continued to be well-connected in the network, their centrality had also been reduced significantly by the 2000s, illustrating once again a decline in the influence they could have exerted over corporate strategy.

*Table 6. Top 25 most central companies (based on Freeman degree), 2000*

<b>Company name</b>	<b>Freeman Degree</b>
British Airways PLC	15
Invensys PLC	14
BT Group PLC	12
Lloyds Banking Group PLC	12
Cable & Wireless Communications PLC	11
Rio Tinto PLC	11
Rolls-Royce Holdings PLC	11
ALLIANCE BOOTS PLC	11
Barclays PLC	11
Standard Chartered PLC	11
BP PLC	10
Glaxosmithkline PLC	9
REUTERS GROUP PLC	9
HSBC Holdings PLC	9

Bank of Scotland PLC	9
M (2003) PLC	8
Marks & Spencer Group PLC	8
Trinity Mirror PLC	8
Rank Group PLC	8
NOVAR PLC	8
Royal Bank Of Scotland Group PLC	8
Prudential PLC	8
Anglo American PLC	7
Tesco PLC	7
Compass Group PLC	7

One of the more powerful explanations for these trends was that despite a continued focus on corporate governance issues by a succession of committees, introducing stricter governance guidelines on corporate connectivity, other factors such as increasing global integration and riskier financial activity caused the network to be drawn apart once again.<sup>90</sup> As a result of these developments, the concentration of ownership declined, suggesting that developments in corporate governance policy and the financial landscape in general continued to influence the nature of ownership in British business. While institutional investors were requesting more information about the companies in which they invested (or planned to invest) in order to obviate both their limited exit options and marginal influence over senior management, this change in attitude was not related to a desire to influence corporate strategy; rather, the motivation was a desire to protect investments and maximise returns.<sup>91</sup> Even though financial institutions continued to be significant owners of British business, their withdrawal from the corporate network serves to corroborate the empirical evidence that shareholders in the twenty-first century continued to exert limited influence over their portfolio companies. This characteristic was further exacerbated by the enormous influx of foreign investors (“Rest of World” in Figure 1) from the 1990s. Crucially, boards remained largely in control of decision-making and strategy, while investors continued their arm’s-length approach, operating mainly through an array of intermediaries who prioritised short-term returns on investments

Despite fluctuating dispersion in network connections through the late 1990s and early 2000s, the global financial crisis of 2007-08 caused yet another dramatic shift in the corporate network. As Figure 8 and Table 7 reveal, by 2010 there had been some re-integration of the network, in that the network reached the highest percentage of integrated firms overall in all benchmark years, along with a low number of marginal firms and an even lower number of isolated firms (only 8.1% of all firms). The number of total ties between firms also increased, indicating increasing density in the network overall. Although banks appear to be continually losing their networked position in this period, the activity of banks such as Barclays and Lloyds suggest a move towards greater intra-sectoral links, perhaps motivated by a need to protect the banks that remained active after the crisis. On the other hand, the position of financials as the most central companies in the network continued to decline in the 2000s (see Table 1). For banks especially, the crisis had a detrimental effect on their position in the network: while the percentage of UK equity ownership by banks had been increasing, reaching an all-time peak of 3.5 % in 2008,<sup>92</sup> by 2010 this had fallen to 2.5%, largely as a result of changes to banks' investment activities in the wake of the crisis.<sup>93</sup> For example, RBS sold off their stake in Direct Line, and similarly Lloyds sold off part of their stake in St. James Place, significantly reducing their investment activity in Britain. The position of other financial institutions also changed in this period, as a number of them returned to the core of the network. For example, firms such as Segro and RSA insurance joined the Top 25 most central companies, while Prudential retained its degree centrality with a Freeman degree of 8. This trend can be partially explained by the increased emphasis on corporate social responsibility,<sup>94</sup> a strategy that was articulated through an increase in corporate connectivity, leading to greater corporate monitoring within the network, as well as an immediate reaction to crisis similar to that which was seen in 1976. With foreign investors accounting for a much-increased proportion of UK equities – “Rest of the World” in Figure 1 rose from 3.6% in 1981 to 24% in 1997 and 41.2% in 2010 - this displaced much of the share-ownership by UK financial institutions which by 2010 had fallen to 38.5 % (excluding banks).<sup>95</sup>

Figure 8. The British corporate network in 2010

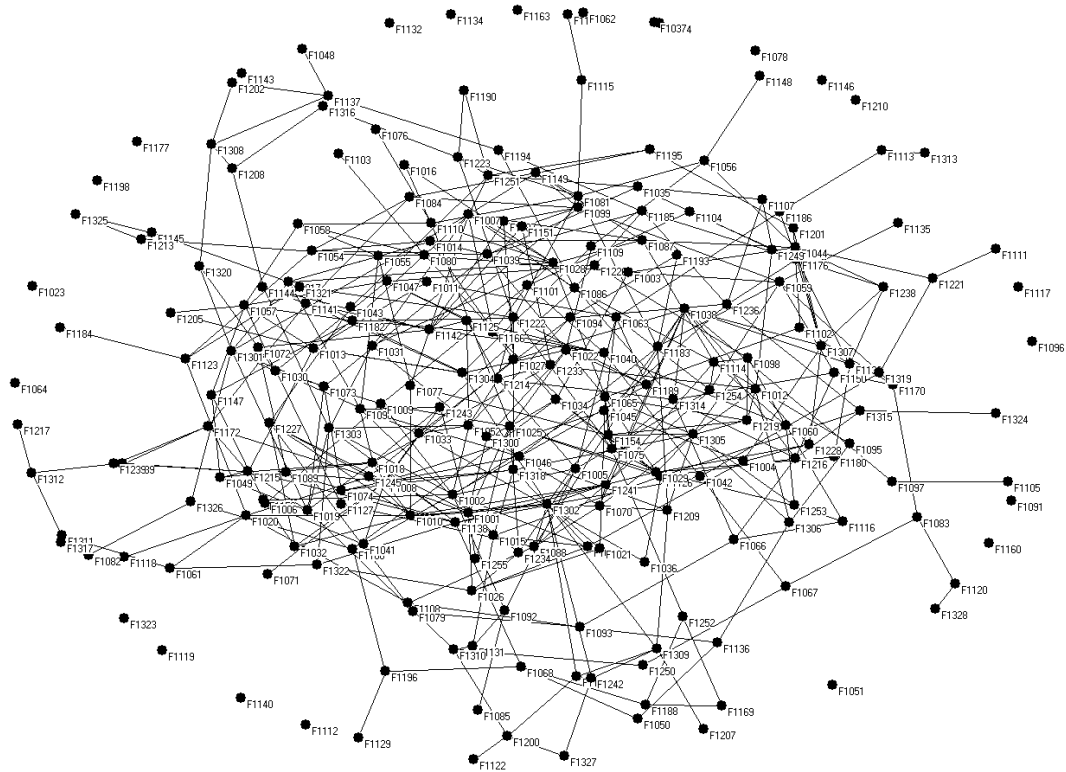


Table 7. Top 25 most central companies (based on Freeman degree), 2010

Company name	Freeman Degree
National Grid PLC	14
WM Morrison Supermarkets PLC	11
Tesco PLC	11
J Sainsbury PLC	11
BP PLC	11
Standard Chartered PLC	11
Royal Bank of Scotland Group PLC (the)	11
Experian PLC	10
Rolls-Royce Holdings PLC	10
Reckitt Benckiser Group PLC	9
BAE Systems PLC	9



Anglo American PLC	9
Reed Elsevier PLC	8
Unite Group PLC (the)	8
IMI PLC	8
DS Smith PLC	8
Halfords Group PLC	8
Segro PLC	8
Johnson Matthey PLC	8
Home Retail Group PLC	8
Vodafone Group PLC	8
RSA Insurance Group PLC	8
Prudential PLC	8
Intertek Group PLC	7
Arm Holdings PLC	7

The increased level of foreign investment in British corporations has had an astounding effect on corporate connectivity. With the influx of foreign investor companies, most of which were institutional investors, interlocks as a method of corporate monitoring within the corporate network became even more difficult. Similarly, the increased emphasis on board independence originating with the 1992 Cadbury Code was further developed through various iterations of the Combined Code of Corporate Governance introduced in 2003. This, together with the increased internationalisation of business and more recently the diversity agenda, reduced the propensity to build corporate networks through board interlocks. Coupled with a standardized reduction in board size from the 1990s, it became even more difficult for British financial institutions to influence corporate decision-making through board representation. While corporate governance mechanisms and investment practices within British financial institutions still needed stricter regulations to monitor investor behaviour, the growing complexity of the financial sector and the influx of new financial intermediaries have

increased the length of the investor chain, creating acute investor disengagement problems that were reflected in the increasing withdrawal of financial institutions from the corporate network. Furthermore, the governance codes of the 1990s and 2000s, while making a concerted effort to improve shareholder-board relationships, have prioritised the protection of shareholders over the implementation of regulations to increase investor control over board activity. As we noted earlier, shareholder primacy was even enshrined in Company Law from 2006, reaffirming the propensity of British firms to pursue this approach. The close-knit corporate network of the 1950s, although less monitored than in recent decades, possessed open lines of communication between boards, giving investors the opportunity to influence company strategy and performance. The decline in intra-sectoral links prevalent in the financial sector before the 1990s also indicated an important shift away from the ‘self-regulatory’ environment which at times provided much needed support, monitoring and advice to financial and non-financial institutions. What Scott and Griff described as the ‘financial control’ of British business in the 1980s was never realised in later decades.<sup>96</sup> The absence of a shift in power into the hands of institutional investors, despite the concentration of ownership by financial institutions into the 1990s, meant that boards and managers were left to run companies, while institutions merely waited for returns on their investments. Into the twenty-first century, the continued control of boards was further demonstrated through the activity and decisions of remuneration committees.<sup>97</sup>

The withdrawal of financial institutions from the network and the overall declining corporate connectivity in recent decades suggests a number of interesting trends related to the degree of communication within and between sectors.<sup>98</sup> The dispersed structure of the current network of interlocks seen in Figure 7 and the involvement of a greater number of foreign owners has significant ramifications for the structure and board-level activity of British firms, especially as it pertains to instances in which financial institutions represent shareholder interests. However, it is questionable whether this marks either the beginning of re-integration of certain types of financial institutions into the core of the network, indicative of the

beginnings of a reinstitution of financial control over British boards, or simply a temporary reaction to new codes of practice and the aftershocks of a global financial crisis. One might note, though, that such were the conclusions of The Kay review (2012) and the Ownership Commission (2012) relating to the deep level of disengagement by institutional investors, both British and foreign, and their continued preference for high-frequency trading, that little would change.

## **Conclusions and implications for further research**

While our previous article on finance-industry relationships for the earlier part of the twentieth century demonstrated shifts in bank amalgamations, connectivity and inter-sectoral ties, this extension of the corporate network analysis further articulates continual transformations in the British financial sector, and indeed British business landscape, as a whole up to 2010. Using an original and comprehensive dataset on the directors of the Top 250 British companies over the period 1976-2010, it has been possible to generate both revised views of the UK's corporate network and contribute to emergent literatures relating to: the evolution of corporate governance in the UK; changes within the British financial sector; and developments within finance-industry relationships in the last few decades. This article has also provided a fresh perspective on wider trends, elaborating further on the work of Scott and Windolf by stretching such methods into the late twentieth and early twenty-first centuries.<sup>99</sup> In particular, we identify a distinct change in the role of British financial institutions in British business in recent decades, suggesting a number of interesting conclusions. Firstly, given the increasing role of financial institutions in UK equity ownership from 1960, the withdrawal of financial institutions from the network suggests a growing disconnect between owners and boards, a feature which can only be fully appreciated through visualising the corporate network. Additionally, major changes in the business landscape related to policy and crises appear to have resonated in the network itself, demonstrating reactive corporate interlocking behaviour amongst the largest businesses in Great Britain.

Apart from what recent developments in the corporate network suggest about the current state of British inter-corporate relationships, and returning to the three observations offered at the start of this article, it is apparent from our research that, firstly, by the 2000s British corporate networks were much less dense than they had been up to the 1980s. Secondly, this highlights the different stages through which UK corporate networks evolved between 1976 and 2010; while up to the 1980s financial institutions were acquiring a significant number of corporate board directorships in both financial and non-financial firms, thereafter they withdrew from the corporate network. This trend can be explained by a combination of extended corporate governance regulations that imposed tighter controls on cross-company interaction and reduced board size, alongside the pursuit of global strategies that took them away from the previous preference for British shareholdings. Thirdly, the 1980s marked a decisive watershed in the relationship between financial and other sectors, radically altering the perception of UK corporate networks that had been generated up to that decade.

Above all, this research presents a novel perspective on changing relationships between Britain's largest companies over the last half century, one which confirms what Hannah noted was the episodic nature of corporate activity in Britain.<sup>100</sup> Through the corporate network lens, one can evaluate the effectiveness of policy and varied regulatory environments, as well as responses to crucial external shifts in the economy and wider corporate strategy. At the same time, it is worth adding that much greater research is required at a micro- case-study level in order to comprehend fully the relationship between boards and investors, providing a challenge that will result in an improved understanding of the dynamics of British business over this period. By building a foundation through which one can identify major shifts, industry anomalies and the changing networked position of particular categories of firms, this study has highlighted important perspectives that warrant further investigation. For instance, the changing position of financials suggests that changes in foreign ownership and increasing global financial connectivity has had a direct impact on corporate connectivity

in British business. Finally, the move towards reintegration seen in both 1976 and again in 2010 suggests a wider response to crisis which can only be fully appreciated through visualising the corporate network. Further research into the impact of crises on the corporate network and interlocking behaviour would reveal much regarding inter-organisational relationship strategies. This research can also suggest some interesting hypotheses that could be more fully realised through micro-level research, especially as it pertains to the continuing disconnect between company boards. While one can accept that shareholder primacy, or “financialization” strategies, continue to influence corporate strategy in general, given the dispersion of the network in recent decades one could argue that there remains what can be termed an ‘ownership paradox’ that allows senior management to dictate policy irrespective of company law, corporate governance codes and post-1960 ownership trends. Through the corporate governance literature and now the revealed dispersion of financial institutions within the corporate network itself, one can find little evidence to support the claim that “New Financial Capitalism” had come to dominate British business. Even though shareholder primacy continued to hold sway, and was indeed enshrined in Company Law by 2006, those which owned the bulk of UK equities failed to engage much in the determination of generic corporate strategy, allowing boards of directors to continue to dominate decision-making and determine their remuneration packages. Given these crucial debates, it is timely to redress corporate interlocks over the past decades and examine these major shifts in British business up to the present period. While this study provides significant conclusions about macro-trends in corporate connectivity since the 1970s, it also crucially provides direction for future research by highlighting potential case studies within a wider context, thereby providing intricate detail regarding changes to the British business landscape.

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1. Wilson, Buchnea & Tilba, "British Corporate Network", 1-28.

2. Scott and Griff, *Directors of Industry*; Scott and Griff, 'Bank Spheres of Influence', pp. 1-19.

3. Scott, *Corporate Business*; Froud et al., *Financialization and Strategy*.

4. Hannah, *Rise of Corporate Economy*, pp. 90-91; 143-156.

5. Toms et al. "The evolution of private equity," 736-68.

6. Cheffins, "Corporate Governance", 717-744.

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7. Roberts, "Regulatory responses to the rise of the market for corporate control", 183-200.
  8. It is essential to emphasise that the firms analysed exclude foreign multinationals. The dataset is described and analysed in Schnyder and Wilson, 'The Structure of Networks', pp. 48-65.
  9. A number of studies have highlighted the correlation between shareholder influence and board interlocks. See Scott and Griff, *Directors of Industry*, p. 17; Rosenstein and Wyatt, "Outside Directors, Board Independence," 175-91; Cai and Sevilir, "Board Connections", 327-49 and Gulati and Westphal, "Cooperative or controlling?" 473-506.
  10. Larson et al, 'Strategic responses to European integration' 40-62.
  11. Davis, "A new finance capitalism?" 11-21; Jackson, "A new financial capitalism?" 23-26.
  12. Liu and Quiet, "Banking sector interconnectedness", (2015) and Burrows and Low, "Mapping the UK financial system" (2015).
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  15. Toms et al, "The evolution of private equity", 736-68; Larson et al. "Strategic responses to global challenges," 40-62; Higgins and Toms, "Financial Institutions and Corporate Strategy," 453-78.
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  17. Garnett et al. "Complexity in history," 182-202.
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  20. Wilson, Buchnea & Tilba, "British Corporate Network", 1-28.
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  24. Ross, 'The clearing banks and industry,' pp. 52-70.
  25. Holmes and Ploeckl, "Bank on Steel?" 88-107.
  26. Acheson, Campbell and Turner, "Active Controllers", 661-691. Foreman-Peck and Hannah, "Extreme Divorce," 1217-38; Acheson et al., "Corporate Ownership and Control," 911-36.

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27. Davis, "A new finance capitalism?" 11-21; Jackson, "A new financial capitalism?" 23-26.
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  29. Haldane, 'Who owns the company?' 11-12.
  30. Bushee, "The influence of Institutional Investors," 305-33; Haldane and Davies, "The Short Long," 1-18; Romano, "Less is More," 174-251; Schleifer and Vishny, "Large shareholder and corporate control," 461-88.
  31. Nicholson and Elms, "Corruption, Corporate Culture," 594-98; Knyght et al., "When rules and principles are not enough," 45-67; Tilba and McNulty, "Engaged versus Disengaged Ownership," 165-82.
  32. Cox et al., "Managing capital market," 585-619.
  33. Karpoff et al., "Corporate Governance," 365-95; Duggal and Millar, "Institutional Ownership," 103-17; Romano, "Less is More," 174-251; Kahan and Rock, "Hedge Funds in Corporate Governance," 1012-93. Bushee, "The influence of Institutional Investors," -33; Conyon and Sadler, "Shareholder Voting," 296-312; Tilba and McNulty, "Engaged versus Disengaged Ownership," 165-82.
  34. Hannah, "Takeover bids in Britain," 65-9.
  35. Zetsche, "Shareholder Passivity," 289-336
  36. Acheson, Campbell and Turner, "Active Controllers", 661-691.
  37. Dahlquist and Robertsson, "Direct foreign ownership," 413-440.
  38. Anderson et al., "Evolution of Corporate Governance", 780-97.
  39. Bainbridge, *Corporate Governance after the Financial Crisis*
  40. Scott and Griff, *Directors of Industry*, p. 17.
  41. Mizruchi, "What do Interlocks Do?" 271-98.
  42. Nordberg & McNulty, 'Creating better boards' 348-74.
  43. Bizjak, Lemmon and Whitby, "Option Backdating", 4821-4847; Hendry and Kiel, "The Role of the Board", 500-520.
  44. Cadbury Report, 1992; Higgs Review, 2003; Cosh and Hughes, "Anatomy of Corporate Control", 285-313; Pass, "Corporate Governance", 52-63; Haunschild and Beckman, "When Do Interlocks Matter?" 814-855.

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45. Roberts, McNulty and Stiles, "Beyond Agency Conceptions", S5-S26.
46. Acheson, Campbell and Turner, "Active Controllers or Wealthy Rentiers?" 661-691.
47. To some extent, while this article is not designed to test the relative efficiency of boards, board size also plays a role here as its standardization and composition since the 1990s has impacted upon the density of the corporate network.
- 48.. Utton, *The Political Economy of Big Business*, p. 32; Whitely, "Commonalities and connections", 613-632.
49. Cosh and Hughes, "Anatomy of Corporate Control," 285-313.
50. Recently, Foreman-Peck and Hannah and Acheson et al. have argued that investor disengagement has been a feature of British business since the Victorian period owing to the dispersion of share ownership within most industries (Breweries excepted). Foreman-Peck and Hannah, "Extreme Divorce," 1217-38; Acheson et al., "Corporate Ownership and Control," 911-36.
51. Aguilera, "Corporate Governance," 39-53.
52. Briston and Dobbins, *Institutional Investors*.
53. Scott and Griff, *Directors of Industry*, pp. 171-3; Scott and Griff, 'Bank Spheres of Influence', pp. 1-19.
54. Mizruchi, "What do interlocks do?" 271-298; Mintz and Schwartz, "Financial Interest Groups", 183-204; Scott, "Corporate control and corporate rule", 351-373; Windolf, "Coordination and Control," 443-57; Fohlin, 'The rise of interlocking directorates in Imperial Germany,' 307-333; Robins and Alexander, "Small worlds among interlocking directors," 69-94; Windolf and Beyer, "Co-operative capitalism," 205-31; Scott, "Corporate control and corporate rule", 351-373; Scott and Griff, *Directors of Industry*.
55. We are aware that there are certain limitations to our data. However, we believe the data serves as an appropriate proxy for scale in British business. A detailed documentation of data sources used is available at <http://www.cgeh.nl/power-corporate-networks-comparative-and-historical-perspective>. For a more detailed description our method and data and any problems encountered, see, Schnyder and Wilson., 'The Structure of Networks: The transformation of UK business, 1904 – 2010', pp. 48-65.
56. The choice of Pajek for our network visualisations was predicated on the frequency of its use in historical network analysis and the varied network measures it allowed us to employ.

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57. Blyler and Coff, "Dynamic Capabilities," 677-686; Badia Miro, Blasco, Lozano, & Soler, "Centrality and investment strategies", 493-515; Salvaj and Couyoumdjian, "'Interlocked' business groups", 129-148.
58. Freeman, "Centrality in Social Networks," 215-39.
59. For sources on the construction of the network and centrality measures, see Schnyder and Wilson, 'The Structure of Networks', pp. 48-65.
60. Wilson, Buchnea & Tilba, "British Corporate Network", 14-17.
61. Cheffins, *Corporate Ownership*, pp. 157-59.
62. Turner, *Banking in Crises*, p. 89.
63. Briston and Dobbins, *Institutional Investors*, p. 54.
64. Toms et al., "The evolution of private equity", 738.
65. Bowden, "Ownership responsibilities and corporate governance," 31-62.
66. Stapledon, *Institutional Shareholders*, pp. 19-20.
67. Capie, *Bank of England*, p. 547; Turner, *Banking in Crises*, p. 89.
68. Our database utilised in our previous article shows a decrease of nearly ten percent from 1958 to 1976.
69. Briston and Dobbins, *Institutional Investors*, pp. 13-14.
70. Cheffins, *Corporate Ownership*, p. 307; Toms and Wright, "Divergence and Convergence," 74-5.
71. Stapledon, *Institutional Shareholders*, pp. 19-20.
72. Cheffins, *Corporate Ownership*, p. 330.
73. Drake, "Efficiency and Productivity," 557-71; Larson et al., "Strategic Responses to Global Challenges," 40-62.
74. Wilson, Buchnea & Tilba, "British Corporate Network", 14-17.
75. Toms and Wright, "Divergence and Convergence," 74-75.
76. Plender, "London's Big Bang," 39-48;
77. Stapledon, *Institutional Shareholders*, p. 20.
78. Toms and Wright, "Corporate Governance," 91.
79. Billings, Tilba and Wilson, 'To invite disappointment or worse', 1-26.
80. Clark and Hebb, "Why should they care?" 2018; Toms and Wright, "Corporate Governance," 108.
81. Stiles and Taylor, *Boards at Work*, pp. 11-2.

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82. Young, "The Increasing Use of Non-Executive Directors," 1311-1342.
  83. Conyon and Mallin, "A review of compliance with Cadbury," 24-37.
  84. Keasey, Short and Wright, *Corporate Governance*, p. 29.
  85. Stapledon, *Institutional Shareholders*, p. 20; Tilba and McNulty, "Engaged versus Disengaged Ownership," 165-82.
  86. Hendry et al., "Owners or Traders?" 1101-1132.
  87. Aguilera, "Corporate Governance and Director Accountability," 42-43.
  88. Examples of such chains in the 2000 network are: National Grid PLC – Energis PLC – Amec PLC – Powergen PLC; and Bank of Scotland – Avis Europe – Henlys Group PLC – Tibbet & Britten Group.
  89. Share Register Survey Report, CSO, 2010.
  90. Turner, *Banking in Crisis*, p. 95.
  91. Clark and Hebb, "Pension Fund Corporate Engagement," 142-71.
  92. Share register survey report, CSO, 2008.
  93. Share register survey report, CSO, 2010.
  94. Giannarakis and Theotokas, "The effect of the financial crisis," 2-10.
  95. Share register survey report, CSO, 2008 and 2010.
  96. Scott and Griff, *Directors of Industry*, pp. 171-173.
  97. Haldane, "Who owns a company?" 17-19.
  98. Davis, "A new finance capitalism?" 11-21; Jackson, "A new financial capitalism?" 23-26.
  99. Scott, "Corporate control and corporate rule", 351-373; Windolf, "Coordination and Control," 443-57.
  100. Hannah, *Rise of Corporate Economy*.